



Cucumis sativus forma *hardwickii* – New record for Rajasthan with status of family Cucurbitaceae of Todgarh-raoli wildlife sanctuary, Rajasthan

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General Note



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ABSTRACT

Present paper deals with 19 species belonging to 8 genera of family Cucurbitaceae collected from this sanctuary. Out of these, one species *Cucumis sativus* L. f. *hardwickii* (Royle) W.J.de Wilde & Duyfjes is reported first time and addition for flora of Rajasthan and also addition for flora of Aravalli range. Three plant species i.e. *Cucumis sativus* L. f. *hardwickii* (Royle) W.J.de Wilde & Duyfjes; *Luffaechinata* Roxb.; *Trichosanthesanguina* L., are first time report and addition for flora of Todgarh-Raoli wildlife sanctuary, Rajasthan.

Keywords: Addition, Cucurbitaceae, Rajasthan, Aravalli, Todgarh-Raoli wls

1. INTRODUCTION

Vegetable crops belonging to the family Cucurbitaceae are known as cucurbits or gourds. This family contains 36 genera and 100 species of cucumbers in India (Chakravathy, 1982). Out of which 37 species belonging to 14 genera reported from Rajasthan (Shetty & Singh, 1987). In the Aravalli range, Cucurbitaceae represents 23 species belonging to 12 genera (Otaghavari *et al.*, 2015). Jain *et al.* (2007) have done work on ethno-medicinal plant and reported 45 plant species including 3 plant species of family cucurbitacear from this sanctuary which used as ethno-medicinal plants. Galav *et al.* (2013) have done work on ethnoveterinary medicinal plant and reported 54 plant species including cucurbits from this sanctuary which used by tribals as ethnoveterinary medicines. Singh and Yadav (2018) extensive work on medicinal important cucurbits of this sanctuary and reported medicinal importance of 5 species belonging to 5 genera. Kanther (2019) have done exploration of this sanctuary and reported 301 plant species including 10 species of family cucurbitaceae from this sanctuary. Purohit (2019a) reported seven families i.e. Balsaminaceae, Caryophyllaceae, Elatinaceae, Geraniaceae, Polygalaceae, Ranunculaceae and Tamaricaceae are first time reported and addition for flora of Todgarh-Raoli wildlife sanctuary, Rajasthan. Tomar & Sharma (2019) have done work on cucurbits of this sanctuary reported 21 plant species of family cucurbitaceae from this sanctuary. Purohit (2020a) reported 106 plant species including 12 species of family cucurbitaceae which used as ethno-medicinal by tribals. Some notable contribution by researchers i.e. Sharma *et al.*, 2005; Sharma & Katewa, 2007; Jain *et al.*, 2011; Kanther & Gena, 2012; Kanther 2018; Purohit, 2019b; Sharma, 2019; Sharma & Khandal, 2019; Purohit *et al.* 2020; Purohit 2020b, 2020c, 2020d, 2020e; have also done work on Todgarh-Raoli wildlife sanctuary and nearby area and reported plant species from this sanctuary.

Study Area

It is situated in most fragile ecosystem of Aravallis, is just 110 kms in the southwest of Ajmer. Geographically this sanctuary is situated between 73°40' – 74°10' East longitudes and 25°20' – 26°0' North latitudes, covers an area of 495.27 km² and extended in three districts. It is one of the protected areas expressing full range of habitat of Aravalli ecosystem. The climate of this sanctuary is dryness, uncertainty of rainfall and great variation in temperature during different season in the year. The major tribal inhabiting in or around the sanctuary are Bhil, Meena, Garasiya etc.

This sanctuary is one of the protected areas expressing full range of habitat of Aravalli ecosystem. It is important from Bio-geographical point of view the patches of Dhok and Salar forests. It has exceptional diversity and interspersed habitat which includes areas of Dhok, Salar, dryland, seasonal streams, cascading mountains and newly formed sand dunes, formed on western hill aspects and fine grooves of mixed wood lands. This sanctuary makes an ecotone between hilly forests of Aravallis and Thar desert situated in the north-west. The hills of this sanctuary acts like a barrier, checking eastward extension of desert. Because this sanctuary have potential to rich plant wealth, its attracts to botanist, so present paper concerns with species diversity of family cucurbitaceae in this sanctuary.

II. MATERIAL AND METHOD

While working on the floristic diversity of the Todgarh-Raoli Wildlife Sanctuary (Rajasthan) during 2015 to 2019, author collected 19 plant samples of family Cucurbitaceae from different locations of this sanctuary and deposited at Botanical Survey of India, Jodhpur (BSJO). After critical study, scrutiny of literature (Blatter & Hallberg, 1920; Sharma & Tiagi, 1979; Chakravarty, 1982; Bhandari, 1990; Shetty & Singh, 1987, Tiagi & Aery, 2007; Dataret *et al.*, 2013; Otaghviri *et al.*, 2015) and herbaria (BLAT, BSJO, BSA, CAL, JAC, DCH, RUBL), all herbarium samples identified correctly and alphabetically listed here.

TAXONOMIC DESCRIPTION OF PLANTS

1. *Citrullus lanatus* (Thunb.) Matsum. & Nakai var. *lanatus*

Taxonomic description: A trailing, hispid annual herb. Stem angular, branched, villous. Tendril pubescent, bifid. Leaves 7 – 16 × 4.5 – 12 cm, ovate-triangular, surface scabrous, denticulate margin, cordate at base, acuminate at apex. Petiole 6 – 10 cm long. Flowers solitary. Male flower: pedicel 2 – 4 cm long; calyx 2 – 3 mm long; corolla 2 – 2.5 cm in diam., pale yellow; stamens free. Female flower: calyx 2 – 3 mm long; corolla 2 – 2.5 cm in diam., pale yellow; ovary 6 – 8 mm long, densely villous; stigma 3. Fruit 15 – 25 cm in diam., globose, green with dark green bands, pulp white or red. Seeds many, 6 – 10 mm long, brown.

Fl. & Fr.: Aug. – Dec.

Local name: Matira.

Distribution: Banswara (Shergarh); Bikaner (Ranjitpura); Jaipur (University R.F.); Jaisalmer; Jhalawar (HatiKhedi block).

Specimen examined: Todgarh-Raoli wildlife sanctuary, Bijajiguda Range, Aasan, 06-Aug-16, 25°57.117'N & 74°07.938'E, 442m, C.S. Purohit 33103.

2. *Cocciniagrandsis* (L.) J.O. Voigt.

Taxonomic description: Dioecious, perennial, climbing herbs, with angular stem. Leaves 4 – 8 × 4 – 8 cm, palmately 5-lobed, minutely denticulate on the margins, with a few glistening glands beneath towards the base. Petiole up to 3 cm long. Male flowers: white, peduncles up to 4 cm long, filiform; Calyx 4 mm long, glabrous; Corolla 4 cm long, villous inside with glandular hairs; Staminal column up to 3 mm long. Female flowers: peduncle up to 3 mm long; calyx 5 mm long; corolla 3 cm long, white, 15 longitudinal green ribs on outside each lobe; Stamens 5, subulate; ovary 15 mm long, fusiform, glabrous, stigma slightly lobed. Fruits up to 5 cm long, fusiform-ellipsoidal, rounded at both ends, subglabrous. Seeds up to 7 mm long, oblong, compressed, rounded at the apex, notched at the base, yellowish.

Fl. & Fr.: May – Dec.

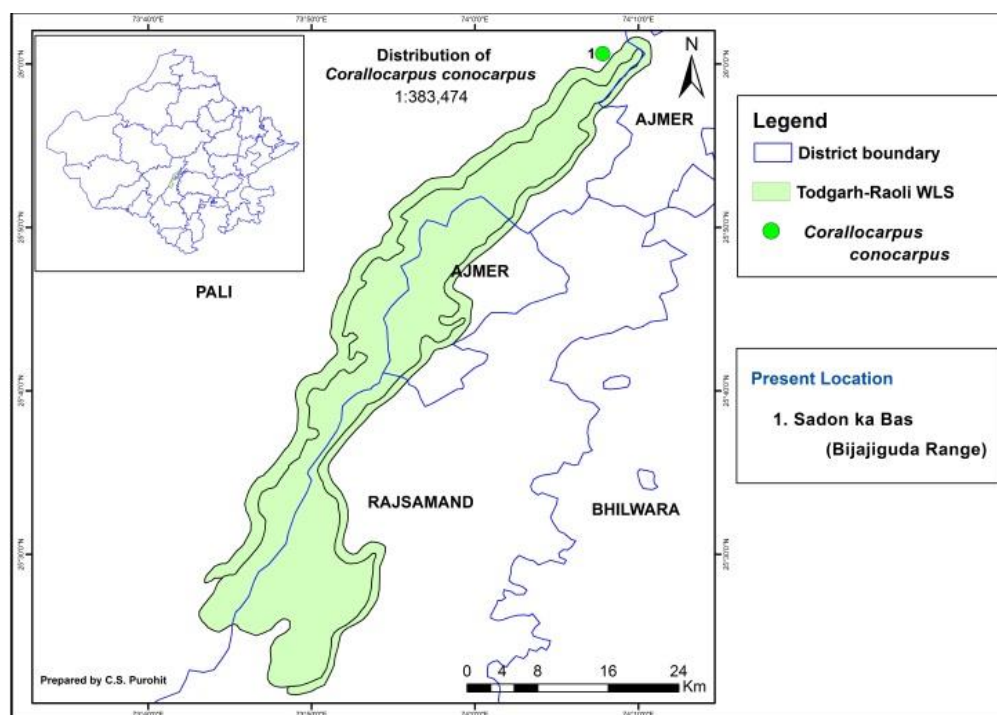
Local name: Kundra, Gol.

Distribution: Banswara; Barmer (Balotra road); Bikaner (Near Sankhlafta, Kolayat); Jaipur (University R.F.); Jodhpur (Kailana, Machiya Biological Park, Phalodi); Kota (Bhil ghati); Nagaur (Narayanpura, Kuchaman); Pali (Sarandana), Todgarh-Raoli wildlife sanctuary.

Specimen examined: Todgarh-Raoli wildlife sanctuary, Bhim Range, Jawaja, 03-Aug-16, 25°39.921'E & 73°59.945'N, 546m, C.S. Purohit 33023; Bijajiguda Range, Aasan, 07-Aug-16, 25°57.117'E & 74°07.938'N, 442m, C.S. Purohit 33110; Raoli Range, LewakiNal, Jhamuda, 11 Nov. 2017, 25°43.962'N & 73°54.875'E, 413m, C.S. Purohit 33295.

3. *Corallocarpus conocarpus* (Dalz. & Gibs.) Hook.f. Fl. Brit. India 2(6). 628. 1879. Shetty & Singh, Fl. Rajasthan 1. 336. 1987. Bhandari, Fl. Indian Desert 148. 1990. *Aechmandraconocarpus* Dalz. & Gibs., Bombay Fl. 100. 1861.

Taxonomic description: A perennial, climbing herb. Stem slender, much branched, branches zig-zag, glabrous. Leaves 3.5 – 7 × 2.5 – 5.5 cm, deeply tri- to penta-lobed, ash-coloured beneath, minutely hairy, cordate at base, mucronate at apex. Petiole 2 – 3 cm long. Male flowers: in crowded racemes on axillary peduncle, peduncle 2 – 3 cm long; calyx 1 – 1.5 mm long, acute at apex; corolla yellow or yellowish-green, glandular hairs inside; stamens 3. Female flower: Calyx 2 – 3 mm long, elongated; corolla yellow or yellowish-green, glandular hairs inside; ovary- bi-locular; stigma bilobed. Berry oblong, orange-red, beaked 8 – 12 mm long. Seeds 4, 3 – 5 mm long, ovate.



Map 1: shows distribution of *Corallocarpus conocarpus* in Todgarh-Raoli wls.

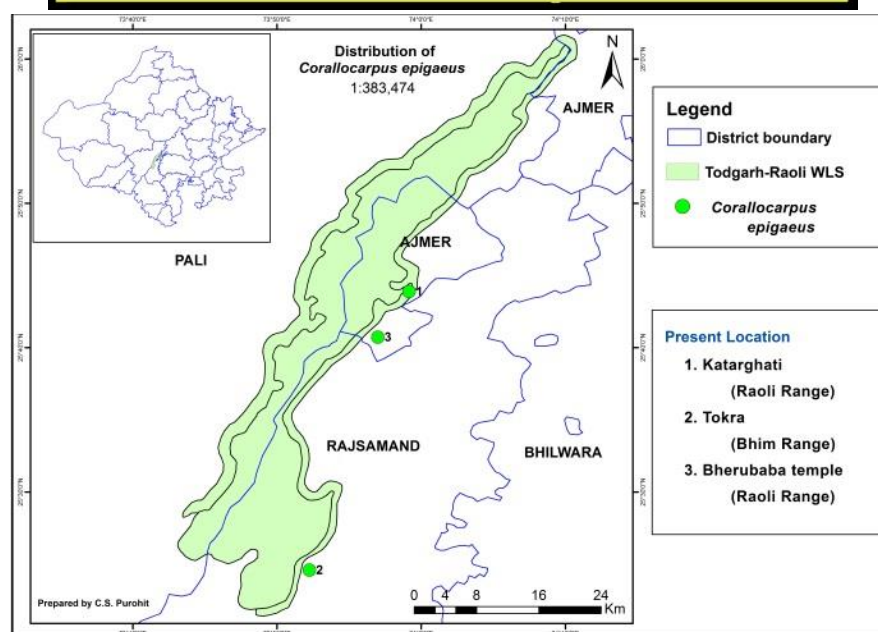
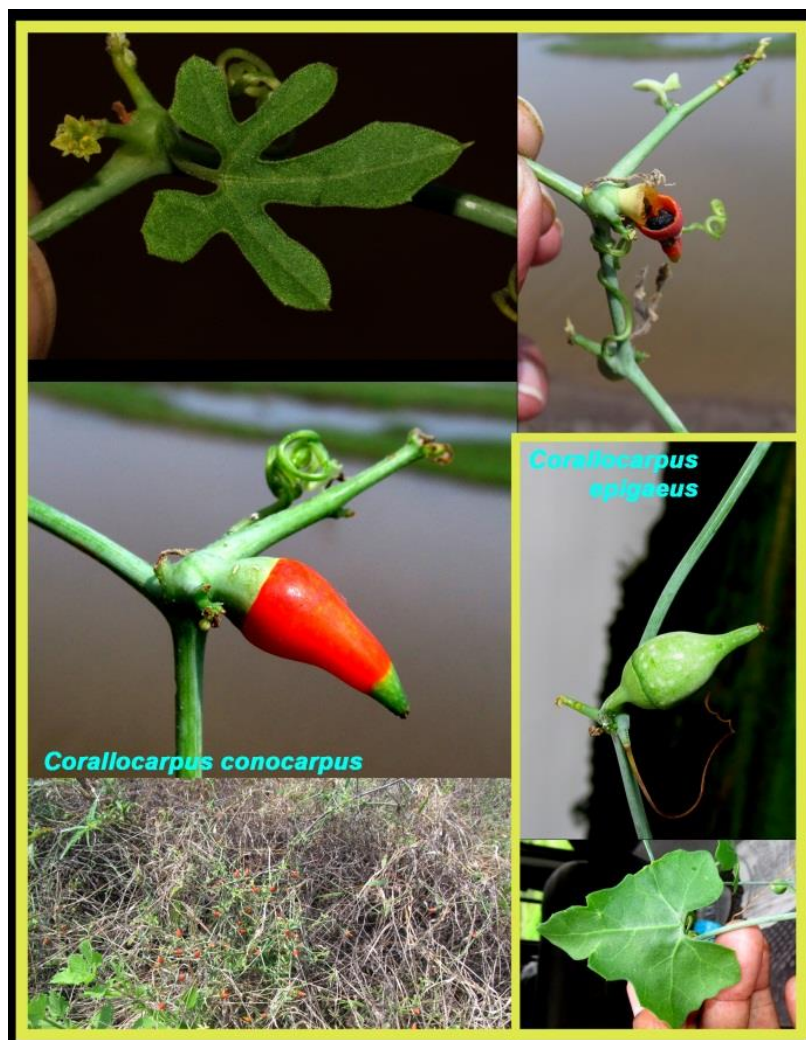
Fl. & Fr.: June – Aug.

Local name: Kadvimirch

Ecology: Endemic to Rajasthan and Gujarat; Threatened.

Distribution: Jodhpur (Luni), Todgarh-Raoli wildlife sanctuary.

Specimen examined: Todgarh-Raoli wildlife sanctuary, Bijajiguda Range, Sadonka Bas, 09-Aug-16, 26°00.663'N & 74°07.825'E, 418m, C.S. Purohit 33142 (Map-1);



Map 2: shows distribution of *Corallocarpus epigaeus* in Todgarh-Raoli wls.

4. *Corallocarpusepigaeus* (Rottl.) Hook.f.

Taxonomic description: A perennial, climbing herbs. Stem slender, 0.5 – 1 cm thick from base, angular. Leaves orbicular, tri- to penta-lobed, 3.5 – 8 × 4 – 11 cm, margin denticulate, round at base, apiculate at apex. Petiole 2 – 3 cm long. Male flowers: 5 – 9, peduncle 3 – 5 cm long; calyx pubescent, up to 1 mm long; corolla yellow, 1 – 1.5 mm long. Female flowers: single; calyx pubescent, up to 1 mm long; corolla yellow, 1 – 1.5 mm long. Fruit 1 – 1.5 cm long, ovoid, red. Seeds 5 – 8, 2 – 3 mm long, turgid. Fl. & Fr.: Aug. – Nov.

Local name: Kadawinai.

Distribution: Jaipur (Ramgarh); Jodhpur (Mandore); Sirohi (Mount Abu), Todgarh-Raoli wildlife sanctuary.

Specimen examined: Todgarh-Raoli wildlife sanctuary, Raoli Range, Katarghati, 30-Jul-16, 25°43.885'N & 73°59.160'E, 674m, C.S. Purohit 32933; Bhim Range, Tokra, 11-Aug-16, 25°24.588'N & 73°52.244'E, 633m, C.S. Purohit 33187; Raoli Range, Bherubaba temple, 05-Sep-18, C.S. Purohit 33596 (Map-2);

5. *Cucumismelo* L.

Taxonomic description: A prostrate, annual, hispid herbs. Stem branched, angular, hispid, white. Leaves suborbicular or reniform, 3 – 7-lobed; lobes shallowly rounded, minutely to distinctly dentate, cordate at base, both surface sparsely hirsute, at length scabro-punctate. Petiole up to 6 cm long, hispid. Male flowers: peduncle up to 2 cm long, yellow, 1-3 on axillary; Calyx 5 mm long, villous; corolla 2 cm long, ovate; filament glabrous, anthers pubescent. Female flower: peduncle up to 2 cm long; calyx & corolla as in male flowers; ovary pyriform, densely white-woolly. Fruits up to 40 cm long, yellow or orange on maturation. Seeds up to 1 cm long, oblong, obtuse, subacute at base, pale yellow.

Fl. & Fr.: August – December.

Local name: Kachro, Kakrio, BaroKachro

Distribution: Banswara (Khusalgarh); Bikaner (Dharnok); Ganganagar (DeraSachhaSuda); Jodhpur (Chaba); Pali (Manda), Todgarh-Raoli wildlife sanctuary.

Specimen examined: Todgarh-Raoli wildlife sanctuary, Bijajiguda Range, Fatehgarh, 01-Aug-16, 25°56.725'N & 74°03.632'E, 410m, C.S. Purohit 32985;

6. *Cucumisprophetarum* L.

Taxonomic description: A prostrate or climbing, perennial, hispid herb. Stem branched, angled, grooved, scabrid with white hairs, grey-green. Leaves 2 – 5 × 3 – 6 cm, deltoid, truncate at base, margin crisped, palmately 3 – 5-lobed. Petiole up to 3 cm long. Tendril filiform. Male flowers: solitary or 2 – 3, peduncle 10 mm long; calyx 1.5 mm long, linear; corolla 4 mm long, small mucro; filaments filiform, anthers oblong. Female flowers: calyx & corolla as in male flower, ovary muriculate. Fruit up to 4 cm long, green, with 7 – 10 white longitudinal stripes, ovoid. Seeds up to 5 mm long, oblong, ash coloured.

Fl. & Fr.: August – December.

Local name: Khat-kachario

Distribution: Ajmer (Akhajeetgarh); Bhilwara (Badnor); Dungarpur; Jaisalmer; Jodhpur (Osian); Nagaur (Roopsar), Todgarh-Raoli wildlife sanctuary.

Specimen examined: Todgarh-Raoli wildlife sanctuary, Bijajiguda Range, Sadonka Bas, 09-Aug-16, 26°00.663'N & 74°07.825'E, 418m, C.S. Purohit 33140; Bhim Range, Goramghat low land, 14 Nov. 2017, 25°38.120'N & 73°46.758'E, 476m, C.S. Purohit 33362;

7. *Cucumis sativus* L. f. *hardwickii* (Royle) W.J.de Wilde & Duyfjes

Taxonomic description: A prostrate, hirsute, annual herb. Stem branched, angular, white hispid. Leaves ovate, 7 – 15 × 7 – 12 cm, cordate at base, tri- to penta-lobed, lobes triangular, dentate, acute at apex. Petiole 10 – 15 cm long. Inflorescence up to 3 flowered. Male flowers: pedicel 6 – 12 mm long; calyx 5 – 10 mm long, densely white pubescent; corolla 1 – 2 cm long, yellow; stamens 3 – 4 mm long. Female flowers: pedicel 1 – 1.5 cm long; calyx 5 – 10 mm long, densely white pubescent; corolla 1 – 2 cm long, yellow; ovary muricate. Fruit oblong or subglobose, 5 – 6 cm long, green with white strips, scabrid with deciduous spines like structure on the surface. Seeds ovate, 4 – 7 mm long, white.

Fl. & Fr.: Sept. – Dec.

Distribution: Todgarh-Raoli wildlife sanctuary (Thoriadeh).

Specimen examined: Todgarh-Raoli wildlife sanctuary, Raoli Range, ThoriaDeh, 01 Sept. 2018, 25°59.453' N & 73°59.218' E, 511m, C.S. Purohit 33531.

8. *Cucumis sativus* L.

Taxonomic description: A prostrate, hirsute, annual herb. Stem branched, angular, white hispid. Leaves ovate, 7 – 15 × 7 – 12 cm, cordate at base, tri- to penta-lobed; lobes triangular, dentate, acute at apex. Petiole 10 – 15 cm long. Inflorescence many flowered. Male flowers: pedicel 6 – 12 mm long; calyx 5 – 10 mm long, densely white pubescent; corolla 1.5 – 2 cm long, yellow;

stamens 4 mm long. Female flowers: pedicel 1 – 1.5 cm long; calyx 5 – 10 mm long, densely white pubescent; corolla 1.5 – 2 cm long, yellow; ovary muricate. Fruit oblong or cylindric, 15 – 30 cm long, yellow-green without strips, less scabrid. Seeds ovate, 5 – 7 mm long, white.

Fl. & Fr.: July – Feb.

Local name: Balam-khira.

Distribution: Bikaner; Jaisalmer; Jodhpur, Todgarh-Raoli wildlife sanctuary.

Specimen examined: Todgarh-Raoli wildlife sanctuary, Raoli Range, Jhamuda, 27-Jul-16, 25°43.633'N & 73°54.747'E, 385m, C.S. Purohit 32853; Bijajiguda Range, Kalalia, 06-Aug-16, 25°55.881'N & 74°08.473'E, 499m, C.S. Purohit 33080; Bhim Range, Dewair, 15-Aug-16, 25°25.884'N & 73°48.017'E, 636m, C.S. Purohit 33224.

9. *Luffa acutangula* (L.) Roxb. var. *acutangula*

Taxonomic description: An annual, prostrate, herbs. Stem penta-angular, glabrous, tendril trifid. Leaves suborbicular, 11 – 21 × 11 – 19 cm, penta- to hepta-angular, cordate at base. Petiole 6 – 10 cm long. Male flowers: in racemes, peduncle 15 – 20 cm long; calyx lanceolate, 1 – 1.5 cm long, lobed, acute at apex; corolla 1.5 – 2 cm long, lobed, lobes apiculate; stamens 3. Female flowers: peduncle 12 – 15 cm long; calyx lanceolate, 1 – 1.5 cm long, lobed, acute at apex; corolla 1.5 – 2 cm long, lobed, lobes apiculate; ovary ribbed. Fruit ellipsoid, 10 – 16 cm long, narrowed towards apex. Seeds 6 – 9, black, rugose, 6 – 9 mm long, beaked.

Fl. & Fr.: Aug. – Dec.

Local name: Kali-Tori.

Distribution: Banswara (Anandsagar); Bharatpur (Sikandra jungles); Bundi, Todgarh-Raoli wildlife sanctuary.

Specimen examined: Todgarh-Raoli wildlife sanctuary, Bijajiguda Range, Naka Kalab, 08-Aug-16, 25°59.142'N & 74°05.117'E, 415m, C.S. Purohit 33126.

10. *Luffa acutangula* (L.) Roxb. var. *amara* (Roxb.) Clarke

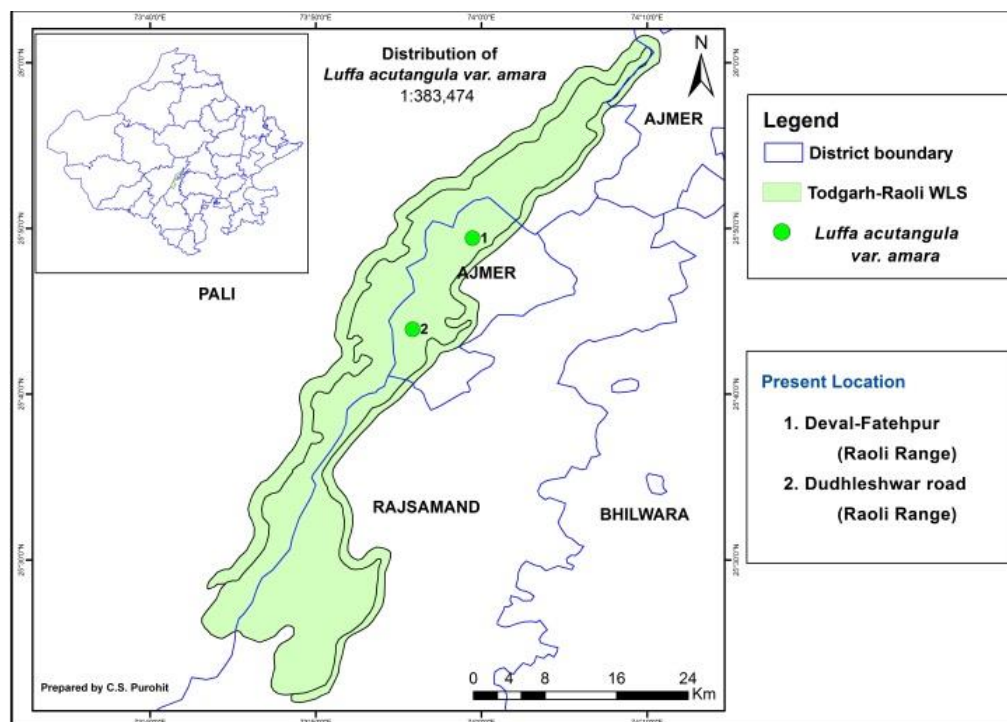
Taxonomic description: It is distinguished by smaller leaves which are whitish, softly villous and scabrous, ovoid or oblong without prominently winged fruits smaller seeds.

Fl. & Fr.: Aug. – Dec.

Local name: Jungli-Tori.

Distribution: Alwar (Pandupole); Barme; Jaipur (Ramgarh), Todgarh-Raoli wildlife sanctuary.

Specimen examined: Todgarh-Raoli wildlife sanctuary, Raoli Range, Ronda, 12 Nov. 2017, 25°48.465'N & 73°59.562'E, 546m, C.S. Purohit 33320; Raoli Range, Dudhleshwar road, 31 Aug-18, C.S. Purohit 33497 (Map – 3).



Map 3: shows distribution of *Luffa acutangula* var. *amara* in Todgarh-Raoli wls.

11. *Luffacylindrica* (L.) M. Roem.

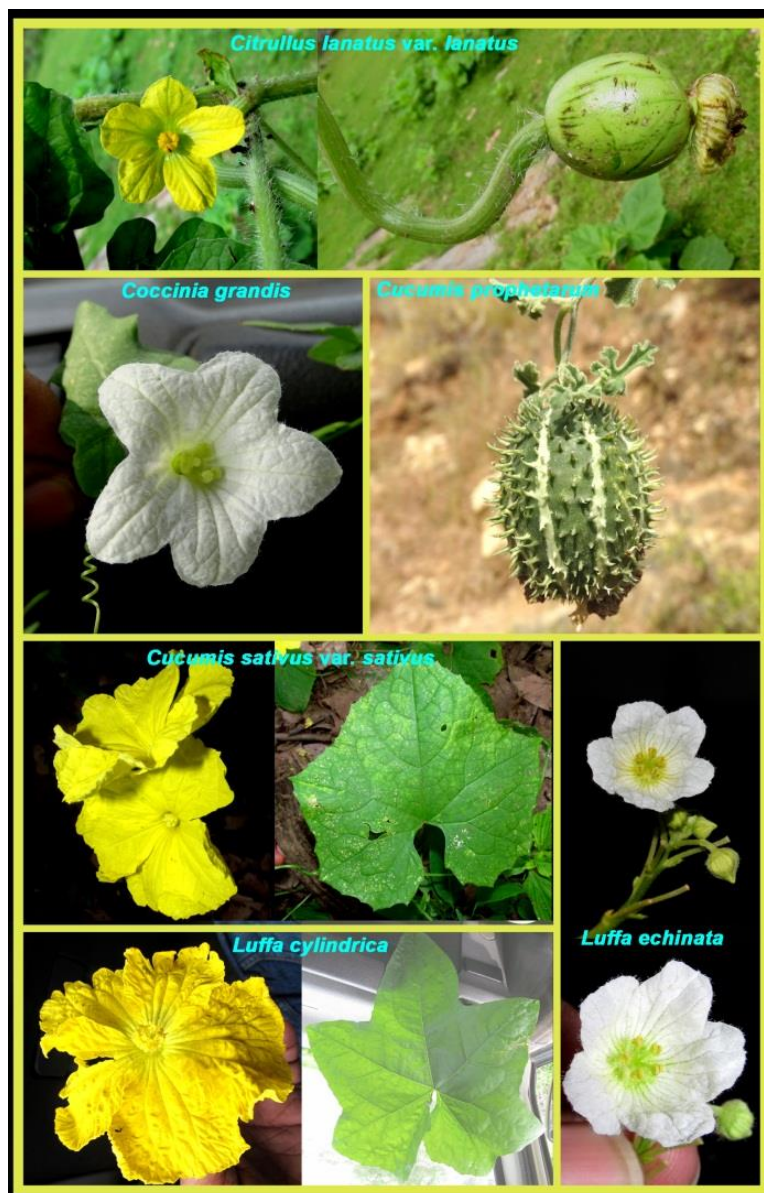
Taxonomic description: A prostrate, annual, climber herbs. Stem 5-angular, glabrous. Leaves 12 – 25 × 10 – 18 cm, palmately 5-lobed, dentate, acuminate, gland dotted on both surfaces, scabrous. Petiole 8 – 10 cm long. Tendril tri-fid. Male flowers: in racemes, peduncle 12 – 25 cm long. pedicels 1.5 – 2 cm long; calyx 1.5 – 2 cm long, lobes triangular, acute; corolla 2 – 4 cm long. Female flowers: peduncle 4 – 5 cm long; calyx glandular; Fruit ovoid-ellipsoid to cylindric, 30 – 40 cm long, not angular, beaked, smooth. Seeds ovate, smooth, 10 – 12 mm long, black, margin winged.

Fl. & Fr.: July – Oct.

Local name: Ghia-Tori

Distribution: Kota (Chhabra), Todgarh-Raoli wildlife sanctuary.

Specimen examined: Todgarh-Raoli wildlife sanctuary, Bijajiguda Range, Fatehgarh, 01-Aug-16, 25°56.725'N & 74°03.632'E, 410m, C.S. Purohit 32976; Bijajiguda Range, Kalalia, 06-Aug-16, 25°55.881'N & 74°08.473'E, 499m, C.S. Purohit 33084.



12. *Luffaechinata* Roxb.

Taxonomic description: An annual, climber herb. Leaves orbicular, 3.5 – 7.5 × 2.5 – 5.5 cm, penta-angled, margin denticulate, rounded at apex. Flowers in longer racemes, white. Fruit 4 – 6 mm long, covered with ciliate hairs. Seed 3 – 4 mm long, black.

Fl. & Fr.: Aug. – Oct.

Local name: Duttar-toru

Distribution: Todgarh-Raoli wildlife sanctuary.

13. *Momordicabalsamina* L.

Taxonomic description: A monoecious perennial, climbers. Stem slender, glabrous. Leaves orbicular or reniform, 6 – 11 × 2.5 – 7 cm, slightly hairy on nerves, glabrous, 5 to 7-lobed; lobes rhomboid or elliptic-ovate, narrowed at base, acute-mucronate at apex, margin irregularly denticulate. Tendrils simple, filiform, glabrous. Petiole 2 – 3 cm long. Male flowers: single, with sessile, suborbicular-cordate bracts; calyx ovate, 4 – 6 mm long, pubescent, acuminate at apex; corolla 1 – 1.4 cm long, yellow, slightly irregular; stamen- connective broad. Female flowers: peduncles 1 – 1.5 cm long; calyx ovate, 4 – 6 mm long, pubescent, acuminate at apex; corolla 1 – 1.4 cm long, yellow, slightly irregular; ovary fusiform, softly hairy. Fruits broadly ovoid, 2 – 2.5 cm long, muricate-tuberculate, fleshy, bright orange-red when ripe. Seeds ovate, 8 – 10 mm long, compressed, grey with carmine-red aril.



Fl. & Fr.: July – Oct.

Local name: Bara-karela.

Distribution: Alwar (Sariska); Barmer (Mokalsar); Bikaner (Meghasar); Ganganagar (Kumbharuwalli); Jodhpur (Kailana, Machiya Biological Park); Kota (Shahabad); Nagaur (Gotten, Merta); Pali (Samajika Guda), Todgarh-Raoli wildlife sanctuary.

Specimen examined: Todgarh-Raoli wildlife sanctuary, Raoli Range, Tilakheda, 12 Nov. 2017, 25°45.930'N & 73°59.203'E, 489m, C.S. Purohit 33330.

14. *Momordicacharantia*L.

Taxonomic description: A prostrate climbing annual herbs. Stem branched, pubescent. Leaves orbicular, 5.5 – 11 × 3.5 – 8 cm, penta- to hepta-lobed, lobes oblong, margin crenate, veins palmate, puberulent on veins, obtuse at apex. Tendril simple, 15 – 20 cm long, puberulent. Petiole 3 – 5 cm long. Male flowers: pedicels 5 – 7 cm long; calyx 8 – 10 mm long, entire, puberulent; corolla obovate, 1 – 1.6 cm long, lemon-yellow; stamen 3. Female flower: peduncle 7 – 11 cm long; calyx 8 – 10 mm long, entire, puberulent; corolla obovate, 1 – 1.6 cm long, lemon-yellow; ovary fusiform, muricate. Fruit oblong, 10 – 15 cm long, ribbed. Seeds oblong, 1 – 1.5 cm long, cream or grey coloured.

Fl. & Fr.: July – Nov.

*Local name:*Karela.

*Distribution:*Banswara (Durgapura forest); Bikaner (Vallabh garden); Ganganagar; Jaipur (Durgapura); Kota (Shahabad), Todgarh-Raoli wildlife sanctuary.

Specimen examined: Todgarh-Raoli wildlife sanctuary, Raoli Range, Modia, 29-Jul-16, 25°46.396'N & 73°57.060'E, 457m, C.S. Purohit 32889; Bhim Range, Tokra, 11-Aug-16, 25°24.588'N & 73°52.244'E, 633m, C.S. Purohit 33190; Raoli Range, Bujarale, Hadila Near, 31-Aug-18, C.S. Purohit 33484;

15. *Momordicadioica*Roxb. exWilld.

Taxonomic description: A perennial, dioecious climbers. Stem slender, young part hairy. Leaves ovate, 4.5 – 9.5 × 3.5 – 7.5 cm, margin denticulate, emarginated at base, mucronate at apex. Petioles 2 – 3 cm long. Tendrils simple, filiform. Flowers brownish – yellow. Male flowers: single, peduncles slender, 3 – 4 cm long, bracts sessile, cucullate, minutely ciliate; calyx linear-lanceolate, 4 – 7 mm long, acute at apex, villose; corolla campanulate, 3 – 4 cm long, yellow, 5-lobed, lobes oblong, obtuse at apex; stamens 3. Female flowers: single, peduncle 8 – 12 cm long; calyx linear-lanceolate, 4 – 7 mm long, acute at apex, villose; corolla campanulate, 3 – 4 cm long, yellow, 5-lobed, lobes oblong, obtuse at apex; ovary clothed with long soft papillae. Fruits ovoid, 4 – 5 cm long, densely echinate with soft spines, yellowish brown. Seeds ovoid, 4 – 6 mm across, yellowish.

Fl. & Fr.: Aug. – Nov.

*Local name:*Kankero.

*Distribution:*Banswara (Paloda); Bikaner (ChakVijaysinghpura); Jaipur (Amer); Jodhpur (Barbi, Kailana, Machiya Biological Park); Kota (Shahabad); Nagaur (Narayanpura, Kuchaman); Tonk (Vijayapura), Todgarh-Raoli wildlife sanctuary.

Specimen examined: Todgarh-Raoli wildlife sanctuary, Raoli Range, Bheelon Ki Nal, 27-Jul-16, 25°43.229'N & 73°55.794'E, 444m, C.S. Purohit 32801; Raoli Range, Bheelon Ki Nal, 27-Jul-16, 25°43.229'N & 73°55.794'E, 444m, C.S. Purohit 32803; Raoli Range, Bheelon Ki Nal, 27-Jul-16, 25°43.229'N & 73°55.794'E, 444m, C.S. Purohit 32832; BijajigudaRante, Fatehgarh, 01-Aug-16, 25°56.725'N & 74°03.632'E, 410m, C.S. Purohit 32978.

16. *Mukiamaderaspatana*(L.) Roem.

Taxonomic description: A scandent or prostrate, dioecious, annual, herbs. Stem branched, slender, sulcate, hispid. Leaves ovate or ovate-cordate, 6 – 14 × 4 – 11 cm, membranous, cordate at base, margin denticulate, obtuse at apex. Tendrils simple, slender, hispid. Petioles 5 – 8 cm long. Flowers yellow. Male flowers: fascicled, pedicels short or absent; calyx 1 – 1.5 mm long, tube campanulate; segments reflexed, subulate, 1 mm long; corolla 1.5 – 2 mm long, yellow; segments ovate-oblong, obtuse at apex; filaments short, slightly pilose; anthers oblong, ciliate; connective distinct. Female flowers: solitary or sub-fasciculate, sessile; calyx 1 – 1.5 mm long, tube campanulate; segments reflexed, subulate, 1 mm long; corolla 1.5 – 2 mm long, yellow; ovary subglobose, covered with black setae. Fruits 6 – 10 mm in diam., brownish-yellow, red when ripe. Seeds ovoid-oblong, 1 – 1.5 mm in diam., grey.

Fl. & Fr.: Aug. – Dec.

*Local name:*Ankh-phootani-bel.

*Distribution:*Banswara (Paloda); Barmer (Surpura); Bikaner (Dharnok); Chittorgarh (Bansi forest); Jaipur (Ramgarh); Kota (Shahabad); Nagaur (Mithadi, Ladnun); Sirohi (Mount Abu), Todgarh-Raoli wildlife sanctuary.

Specimen examined: Todgarh-Raoli wildlife sanctuary, Raoli Range, Katarghati, 14 Nov. 2017, 25°43.885'N & 73°59.160'E, 674m, C.S. Purohit 33356.

17. *Trichosanthesanguinal*L.

Taxonomic description: Annual climber herbs. Stem slender, angular, branched, puberulent. Leaves suborbicular, 7 – 14 × 9 – 14 cm, deeply tri- to hepta-lobed, lobes obovate, puberulent on both side, margin denticulate. Tendril bi or tri-fid. Petiole 5 – 7 cm long. Male flowers in raceme, peduncle 10 – 15 cm long; bracts 2 – 3 mm long; calyx 2 – 3 mm long, cylindric Female flowers:

single, peduncle 0.6 – 1 cm long; ovary narrowly fusiform. Fruit 60 – 90 cm long, smooth, with 7 – 8 white stripes. Seeds oblong, 1 – 1.3 cm long, rugulose.

Fl. & Fr.: July. – Oct.

Local name: Chachinda.

Distribution: Jhunjhunu (Pilani); Kota (Kelwara).

Specimen examined: Todgarh-Raoli wildlife sanctuary, Raoli Range, Satumoda, 28-Jul-16, 25°42.552'N & 73°55.386'E, 457m, C.S. Purohit 32864.

18. *Trichosanthes cucumerina* L.

Taxonomic description: An annual monoecious climber. Stem slender, profusely branched, pubescent. Leaves orbicular, 6.5 – 11 × 7 – 12 cm, deeply penta- to hepta-lobed; lobes triangular, hairy. Tendril bi or tri-fid, slender. Petiole 4 – 5 cm long. Male flower: in raceme, peduncle 12 – 18 cm long; calyx 1 – 1.5 cm mm long; corolla white. Female flower: single, peduncle 1 – 1.5 cm long; ovary oblong. Fruit oblong, 5 – 7 cm long. Seeds 7 – 10, ovate, 1 – 1.2 cm long, compressed, attenuate at base, truncate at apex.

Fl. & Fr.: July. – Oct.

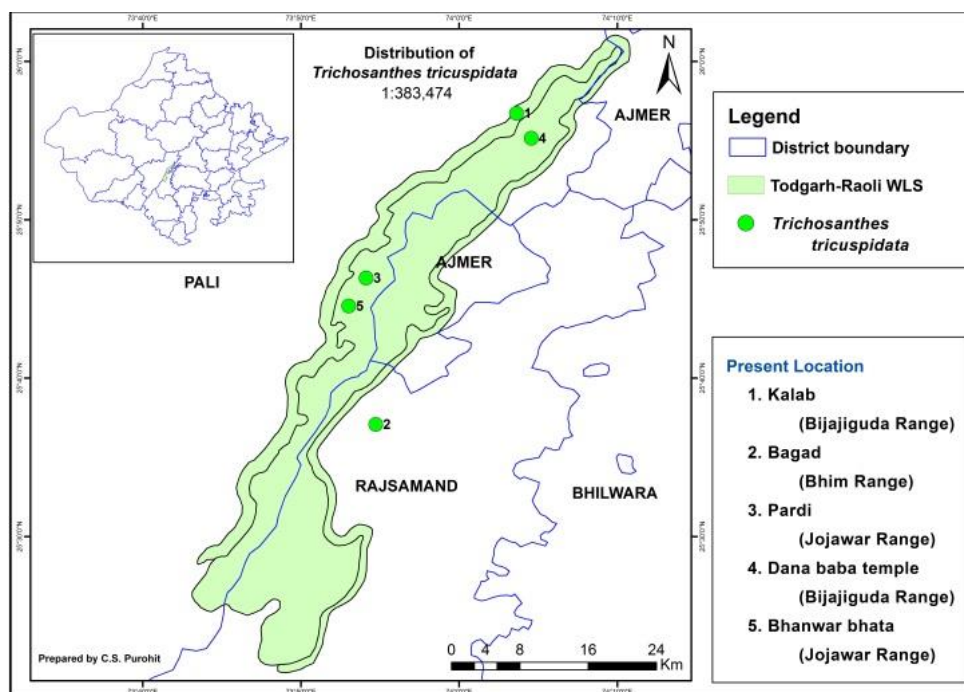
Local name: Junglipulvul.

Distribution: Banswara (Ghatol); Jhalawar (Aklera); Kota (Darrah); Udaipur, Todgarh-Raoli wildlife sanctuary.

Specimen examined: Todgarh-Raoli wildlife sanctuary, Raoli Range, Bheelon Ki Nal, 27-Jul-16, 25°43.229'N & 73°55.794'E, 444m, C.S. Purohit 32835.

19. *Trichosanthes tricuspidata* Lour.

Taxonomic description: Annual, climbing herb. Stems branched, branches glabrous, angular, grooved. Leaves suborbicular, broadly ovate-cordate, 6– 18 × 7– 14 cm, palmately tri to penta-lobed; lobes ovate-triangular, glabrous or tomentose beneath, margin undulate-denticulate, acute or shortly acuminate apex. Petiole 3 – 5 cm long, striate, glabrous, punctate. Male flowers: raceme; peduncle 12 – 15 cm long, stout, striate and grooved, glabrous; pedicel short; bracts obovate-oblong, villous, margin dentate, obtuse apex; Calyx narrowly funnelform; segments narrowly lanceolate; corolla white. Female flowers: axillary, solitary; bracts fimbriate. Fruits 4 – 6 cm in diam., globose, small, red with 10 longitudinal streaks. Seeds ovate-oblong, 6 – 10 mm long, smooth.



Map 4: shows distribution of *Trichosanthes tricuspidata* in Todgarh-Raoli wls.

Fl. & Fr.: July – Nov.

Local name: LalIndrayan.

Distribution: Banswara (Kalingra, Lohasaria forest); Bundi (Bhati-bagia); Kota (Shahabad); Pali (Lampi); Tonk (Toda Rai Singh R.F.), Todgarh-Raoli wildlife sanctuary.

Specimen examined: Todgarh-Raoli wildlife sanctuary, Bijajiguda Range, Kalab, 01-Aug-16, 25°56.725'N & 74°03.632'E, 410m, C.S. Purohit 32959; Bhim Range, Bagad, 02-Aug-16, 25°37.079'N & 73°54.732'E, 652m, C.S. Purohit 32994; Jojawar Range, Pardi, 12 Nov. 2017, 25°46.325'N & 73°54.115'E, 435m, C.S. Purohit 33316; Bijajiguda Range, Dana Baba Temple, 08-Aug-16, 25°34.807'N & 74°04.006'E, 500m, C.S. Purohit 33120; Jojawar Range, Bhanwarbhata, 02-Sep-18, 25°44.552'N & 73°53.017'E, 366m, C.S. Purohit 33549; Bijajiguda Range, Dana baba temple, 08-Sep-18, 25°34.807'N & 74°04.006'E, 500m, C.S. Purohit 31022 (Map – 4).

III. RESULT AND DISCUSSION

Present status of family Cucurbitaceae in Todgarh-Raoli wildlife sanctuary shows that family Cucurbitaceae is 9th dominant family in this sanctuary but according to Kanther's 2019, it is on 6th number dominant family in this sanctuary. In Aravallirange (Otaghvari *et al.* 2015) and Rajasthan (Shetty & Singh, 1993), it was not placed in top 10 dominant families of this sanctuary.

[1]. Statistical Analysis of Family Cucurbitaceae:

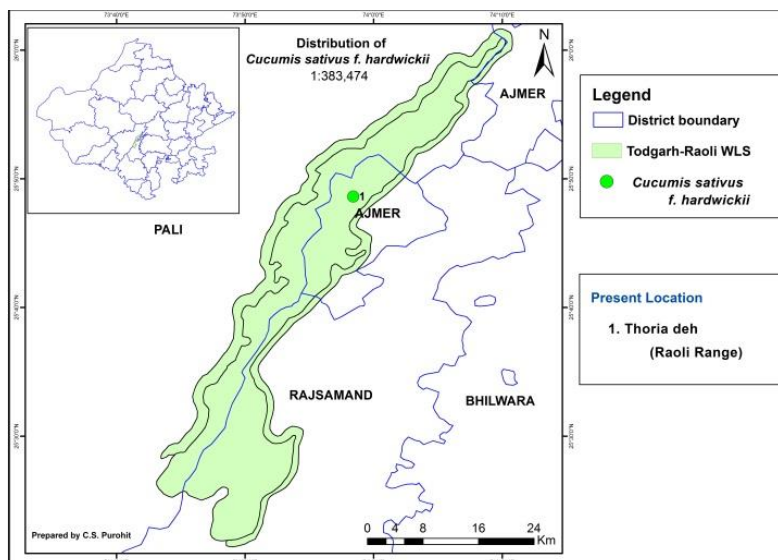
The present work enumerates 19 species, belonging to 8 genera under family Cucurbitaceae (Table-1). The family Cucurbitaceae maintains 9th number highest diversity among angiosperms containing 19 species under 8 genera. The three genera represented by single species i.e. *Citrullus*, *Coccinia* and *Mukia*.

Table.1: Status of family Cucurbitaceae in Todgarh-Raoli wildlife sanctuary, Rajasthan

Family Name	Genus no.	Genus Name	Species no.
CUCURBITACEAE	1	<i>Citrullus</i>	1
	2	<i>Coccinia</i>	1
	3	<i>Corallocarpus</i>	2
	4	<i>Cucumis</i>	4
	5	<i>Luffa</i>	4
	6	<i>Momordica</i>	3
	7	<i>Mukia</i>	1
	8	<i>Trichosanthes</i>	3

[2]. Additionfor Flora of Rajasthan

During the coarse of field exploration of protected area of Todgarh-Raoli wildlife sanctuary in Aug. – Sept. 2018, author demarcated and collected small population of individuals belonging to genus *Cucumis* from Thoriadeh (Raoli Range) with 1-3 flowers, green with white stripes, ovoid fruit and spine like structure on fruit. After critical study, scrutiny of literature (Chakravarty, 1982; Bhandari M.M. 1990; Shetty and Singh 1987, Datar *et al.*, 2013) and herbaria (BSJO, BSA, RUBL, JAC, BLAT, DCH, CAL, K), it is identified as *Cucumis sativus* L. f. *hardwickii* (Royle) W.J.de Wilde & Duyfjes. It is first time report and addition for flora of Rajasthan (Map – 5).





Map 5: shows distribution of *Cucumis sativus* f. *hardwickii* in Todgarh-Raoli wls.

[3]. Addition for Flora of Aravalli Range:

In comparison with Cucurbitaceae of Aravalli range, 67% genera of aravalli range represent in Todgarh-Raoli wildlife sanctuary (table-4), whereas 83% species and variety of aravalli range represent in this sanctuary. In comparison with Rajasthan flora, 57% genera and 51% species, var. of family Cucurbitaceae represents in this Sanctuary.

Otaghvari *et al.* (2015) have done extensive work on flora of Aravalli range and reported 23 species belonging to 12 genera under family Cucurbitaceae (Table-2). In this paper, *Cucumis sativus* L. f. *hardwickii* (Royle) W.J. de Wilde & Duyfjes; is first time report from Aravalli range and addition for flora of Aravalli range.

Table 2. Comparison of Cucurbitaceae of this sanctuary with previous publications.

Family	(1)	(2)	(3)	(4)
Cucurbitaceae				
Genus	8	7	12	14
Species & variety	19	10	23	37

(1): Todgarh-Raoli wls. (Purohit, 2020); (2): Todgarh-Raoli wls (Kanthar, 2019);

(3): Aravalli range (Otaghvariet. *al.* 2015); (4): Flora of Rajasthan (Shetty& Singh, 1993);**[4]. Addition for Flora of Todgarh-Raoli wildlife sanctuary**

Kanthar (2019) have done extensive work on vegetation of Todgarh-Raoli wildlife sanctuary and reported 301 plant species including 10 species belonging to 7 genera under family Cucurbitaceae. Present work consider 19 plant species, out of these three plant species i.e. *Cucumis sativus* L. f. *hardwickii* (Royle) W.J.de Wilde & Duyfjes; *Luffaechinata* Roxb.; *Trichosanthesanguina* L.; are first time report and addition for flora of Todgarh-Raoli wildlife sanctuary.

IV. CONCLUSION

Present paper deals with 19 species belonging to 8 genera of family Cucurbitaceae collected from this sanctuary. Out of these, one species *Cucumis sativus* L. f. *hardwickii* (Royle) W.J.de Wilde & Duyfjes is reported first time and addition for flora of Rajasthan and also addition for flora of Aravalli range. Three plant species i.e. *Cucumis sativus* L. f. *hardwickii* (Royle) W.J.de Wilde & Duyfjes; *Luffaechinata* Roxb.; *Trichosanthesanguina* L.; are first time report and addition for flora of Todgarh-Raoli wildlife sanctuary.

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Conflict of interest

The author has no conflict of interest to declare that are relevant to the content of this article.

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All data associated with this study are present in the paper.

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